
Audit of Capital Planning and Investment Management



FINAL AUDIT REPORT ED-OIG/A07-C0033 September 2003

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U.S. Department of Education
Office of Inspector General
Kansas City, Missouri Office

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UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF INSPECTOR GENERAL

MEMORANDUM

SEP 12 2003

TO: William J. Leidinger,
Assistant Secretary for Management and Chief Information Officer

FROM: Helen Lew *Helen Lew*
Assistant Inspector General for Audit

SUBJECT: FINAL AUDIT REPORT
Audit of Capital Planning and Investment Management
Control No. ED-OIG/A07-C0033

Attached is our subject report presenting our findings and recommendations resulting from our review of the Department's efforts in developing a capital planning and investment management process in compliance with the Clinger-Cohen Act of 1996. The report identifies areas for improvement and provides recommendations. We received your comments, which basically concurred with the findings in our draft audit report.

Please provide the Supervisor, Post Audit Group, Office of Chief Financial Officer and the Office of Inspector General with quarterly status reports on promised corrective actions until all such actions have been completed or continued follow-up is unnecessary.

In accordance with the Freedom of Information Act (5 U.S.C. §552), reports issued by the Office of Inspector General are available to members of the press and general public to the extent information contained therein is not subject to exemptions in the Act.

We appreciate the cooperation given us in the review. Should you have any questions concerning this report, please call William T. Allen at (816) 268-0501. Please refer to the above audit control number in all correspondence relating to this report.

Attachments

Audit of Capital Planning and Investment Management

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Audit of Capital Planning and Investment Management

Executive Summary

We reviewed the Department of Education's (Department) information technology (IT) capital planning and investment review process. The objective of our review was to assess the status of the Department's compliance with the Clinger-Cohen Act¹ requirements for capital planning and investment management. Specifically, we determined whether the Department's investment review process ensured that 1) IT investment decisions were consistent with the enterprise architecture currently under development; 2) costs and benefits of each investment were fully considered in determining which projects to fund; and 3) costs and benefits of all IT investments were adequately tracked and considered in determining the mix of projects funded for the Department's overall investment portfolio.

The General Accounting Office's (GAO) Information Technology Investment Management (ITIM) maturity framework² provides guidance to agencies in implementing the Clinger Cohen Act's requirements for capital planning and investment management. ITIM identifies critical processes for successful IT investment using a framework of five stages of increasing maturity.³ We found that the Department is making progress in developing mature investment management capabilities. Specifically, we found that the Department was at stage two – defined as building the investment foundation, but is also performing core elements related to stage three – defined as developing a complete investment portfolio.

Although the Department is making progress in developing important management capabilities, it still has considerable work ahead to fully implement mature and effective processes. We found that the Department did not have adequate investment management processes to ensure that 1) IT investment decisions were consistent with the enterprise architecture currently under development; 2) decision-makers had complete life-cycle information on cost, benefits, schedule, and risk (CBSR) to fully consider in determining which projects to fund; and 3) CBSR for all IT

¹ Previously referred to as the Information Technology Management Reform Act of 1996, Division E of Public Law 104-106, 110 Stat. 679 (1996).

² *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, Exposure Draft (GAO/AIMD-10.1.23), May 2000.

³ GAO defined the five stages of maturity in the process of developing successful IT investment management capabilities: Stage 1 – creating investment awareness; Stage 2 – building the investment foundation; Stage 3 – developing a complete investment portfolio; Stage 4 – improving the investment process; and Stage 5 – leveraging IT for strategic outcomes (see pages 4-5 for a more complete description of what each stage entails).

investments were adequately tracked and considered in determining the mix of projects funded for the Department's overall investment portfolio.

We reported, in September 2002, that the Department had not completed a target enterprise architecture (EA).⁴ Without a completed target architecture the Department's IT goals may not be explicitly clear to decision-makers and the Department may not have the necessary information crucial to evaluating IT investments. We found that each of the 47 business cases we reviewed included an EA compatibility score with no explanation of how the score was calculated. None of the business cases included specific information related to the proposals compatibility with the target enterprise architecture. In May 2003, the Department's Enterprise Architecture Working Group (EAWG) began analyzing all business cases before the Investment Review Board (IRB) decides which investments to fund. Given its role, the EAWG is in the best position within the Department to ensure compliance with the enterprise architecture.

In accordance with GAO's ITIM framework, the Department has categorized investment proposals and established basic characteristics (selection criteria) for evaluating new IT proposals. In addition, the Department is using the established criteria in evaluating and selecting IT investments. However, the Department does not always ensure that the IT proposals have the most up to date and complete life-cycle cost, benefit, schedule, and risk (CBSR) information available; and use that information in evaluating competing investments and deciding on which investments to fund both within and between the defined categories. In addition, the Department has not implemented processes associated with managing investments as a complete portfolio. As a result, the Department's IRB may not be able to adequately assess the relative merits of investment proposals and make trade-offs among competing options.

The Department generally concurred with our findings and recommendations and stated that improvements had already been made and incorporated in its most current IT Investment Management (ITIM) process. In addition, the Department's response indicated that it had already implemented many of the audit's recommendations, but acknowledged that there was still an opportunity for improvement by ensuring the practices are consistently applied. We have incorporated their comments, where appropriate, and provided the Department's full response as an attachment to this report.

⁴ *Audit of Enterprise Architecture*, Final Audit Report, dated September 30, 2002 (ED-OIG/A07-C0001).

Audit of Capital Planning and Investment Management

Audit Results

Developing an effective investment management capability is a challenging and necessary process to ensure that information technology investments are selected, controlled, and evaluated in a cost-effective and efficient manner, within the context of an overall information technology strategy. We assessed the status of the Department's compliance with the Clinger-Cohen Act requirements for capital planning and investment management. Specifically, we determined whether the Department's investment review process ensured that 1) information technology (IT) investment decisions were consistent with the enterprise architecture currently under development; 2) costs and benefits of each investment were fully considered in determining which projects to fund; and 3) costs and benefits of all IT investments were adequately tracked and considered in determining the mix of projects funded for the Department's overall investment portfolio.

The Department has made progress in taking specific actions to lay the groundwork for its investment management. In our review of the business cases, we have analyzed the information presented to the IRB in these meetings and found that the information provided and the process is improving after each meeting. However, critical elements need to be completed in order for the Department, including Federal Student Aid (FSA), to have mature investment management capabilities in place for acquiring and using systems across the Department in a cost-effective and efficient manner.

In May 2000, GAO issued an Information Technology Investment Management (ITIM) maturity framework,⁵ which identifies critical processes for successful IT investment and organizes these processes into a framework of increasingly mature stages. ITIM supports the fundamental requirements of the Clinger-Cohen Act, which calls for IT investment and capital planning processes and IT performance measurement. ITIM is intended to provide a tool for implementing these processes incrementally and effectively; and has been favorably reviewed by Federal Chief Information Officers (CIOs) and members of GAO's advisory council on IT management.

⁵ *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, Exposure Draft (GAO/AIMD-10.1.23), May 2000.

ITIM is a hierarchical model comprising five different maturity stages. Each stage builds upon the lower stages and represents a step toward achieving both stable and effective IT investment management processes. The framework indicates that with the exception of the first stage—which reflects a general absence of investment management processes—each maturity stage is composed of critical processes that must be implemented and institutionalized for the organization to satisfy the requirements of that stage and be able to advance to the next stage. These critical processes are further broken down into key practices. Key practices are the specific tasks and conditions that must be in place for an organization to effectively implement the necessary critical processes. The following shows the five ITIM stages and a brief description of each stage (see Appendix I for a more complete description and what steps the Department has completed in relation to each stage of maturity):

- ***Stage 1: Creating Investment Awareness*** is characterized by either no plans to develop and use investment management techniques, or plans and actions that do not yet demonstrate an awareness of the value of using them.
- ***Stage 2: Building the Investment Foundation*** focuses on foundational processes focusing on cost and schedule activities.
- ***Stage 3: Developing a Complete Investment Portfolio*** is characterized by comprehensive investment portfolio selection and control techniques incorporating benefit and risk criteria linked to mission goals and strategies.
- ***Stage 4: Improving the Investment Process*** focuses on improving the performance and management of the organization's IT investment portfolio.
- ***Stage 5: Leveraging IT for Strategic Outcomes*** is characterized by IT-enabled change management techniques used to strategically shape business outcomes.

In a January 2001 assessment of the Department's IT capital planning and investment management processes, Booz-Allen and Hamilton, Inc., an independent contractor, concluded that the Department was between stage one and stage two. In updating the contractor's 2001 assessment⁶, we found that the Department is in the process of completing the core elements listed in stage two and has begun working on some elements listed in stage three of GAO's ITIM maturity framework. The Department has made progress in taking specific actions to lay the groundwork for mature investment management capabilities, but it is lacking some basic building blocks as described in the following sections. The Department has not

⁶ Our update of the 2001 assessment was limited to the scope of our review – see Appendix I.

- Completed its development of a functional enterprise architecture (Stage 2);
- Implemented processes necessary to ensure project-level control and selection, using up to date and complete life-cycle cost, benefit, schedule, and risk (CBSR) information in evaluating competing investments and deciding on which investments to fund (Stage 2); and
- Implemented an investment management practice to continually assess proposed and ongoing projects as an integrated and competing set of investment options (Stage 3).

Addressing these issues, which are discussed in the remainder of the report, is crucial as the Department continues to develop a mature investment management capability.

Finding 1 – The Department Has Limited Processes to Ensure Investments are Consistent with its Target Architecture

The Department has limited investment management processes in place to ensure that investments are consistent with the basic concepts of its targeted enterprise architecture (EA). The Office of Management and Budget (OMB) guidelines⁷ require Federal agencies to develop and implement an EA to provide a framework for evolving or maintaining existing and planned information technology, and for evaluating investments in terms of the entity's progress toward the desired operational and technological environment. An EA is a core element in stage two of GAO's ITIM maturity framework. The Department does not have a complete, functional EA to guide its investment activities, which precludes the Department from achieving a stage three maturity level.

As we reported, in September 2002, the Department has not completed a target EA.⁸ The Department provided corrective action plans addressing each of the recommendations in the report with 9/30/03 as its planned completion date for the target architecture and 6/30/04 as its planned date for using the architecture in investment management decisions.

Without a completed target architecture or an explicitly defined process to use the most current architecture information available, the Department's IT goals may not be explicitly clear to decision-makers. As a result, the Department may not have the necessary information crucial to evaluating IT investments and ensuring investments are consistent with the basic concept of its target architecture.

⁷ *Management of Federal Information Resources*, OMB Circular A-130 (November 30, 2000).

⁸ *Audit of Enterprise Architecture*, Final Audit Report, dated September 30, 2002 (ED-OIG/A07-C0001).

In our review of 47 business cases⁹ presented to the IRB, we found that none of the business cases included specific information related to the proposals compatibility with the target EA. Each of the investment proposals included a score for EA compatibility, but there was no clear information on what was used to determine the score. According to the IT Investment Management Team Leader, the Department's investment process uses the IT Initiative Line of Business Alignment model to identify and note potential redundancies. He stated that they scored IT projects compliance by evaluating the mission alignment of the project to the Department's strategic plan goals and objectives. In addition, they looked at the projects consistency with the Department's product support plan as a means to gauge compliance with the Department's technical architecture.

The Department's Technology Review Board reviews new IT proposals for technical merit; the Configuration Review Board reviews on-going IT projects; and beginning in May 2003, the Department's Enterprise Architecture Working Group (EAWG) analyzes all business cases before they are presented to the IRB for funding decisions (i.e., during the select phase of the investment). The EAWG developed five basic questions, the answers to which should determine the compatibility with the Department's EA. Those questions relate to whether or not the IT proposal supports the implementation of the Government Paperwork Elimination Act and has been reviewed by the Technology Review Board; related interoperability, security, and scalability issues; the tier of the process within the architecture and related security, privacy, and risk assessments; determining the data source for the application; and the applications dependency on communication with other systems. The questions do not specifically address the target architecture. However, having the type of information provided through the EAWG's review should be valuable to the IRB in evaluating competing investment initiatives and making approval and funding decisions. The EAWG is currently in the process of developing a method for communicating the results of its review of the IT initiatives to the IRB.

As indicated, the Department has several groups reviewing the technology layer of IT proposals and investments. However, we found no evidence of reviews for the data layer of the architecture. In addition, the Department has not formalized its EA review process for IT investments in written procedures. Without a formalized review process for EA compliance it is not clear where responsibilities of one review group end and another begins, which could permit potential EA compliance problems to slip through undetected. In addition, there is a definite disadvantage to not having a completed, functional EA to use in making investment decisions, however, the EAWG should be in the best position within the Department to evaluate an initiative's compliance with the EA. We have reviewed the EAWG's methodology for reviewing the initiatives, as provided in the

⁹ We reviewed the entire universe of fiscal years 2003 and 2004 business cases presented to the IRB for funding (i.e., the select phase of the investment).

five investment questions, and believe that the EAWG review should add value to the Department's investment review process.

Recommendations

We recommend that the Department CIO

- 1.1 Formalize the Department's review process for IT investment compliance with its EA through written procedures delineating review responsibilities between groups.

We also recommend that the EAWG

- 1.2 Provide a high-level summary of whether the new initiative is supported by the current architecture or whether the architecture or the initiative need to be changed in order to assist the IRB in its evaluation of competing investment initiatives; and
- 1.3 As the information becomes available on the Department's target architecture, incorporate it into the review of EA compliance.

Finding 2 – The Department Has Not Implemented Necessary Processes to Ensure Project-level Control and Selection

According to GAO¹⁰, the first step toward establishing effective investment management is putting in place a foundation of effective project-level control and selection processes. These processes will allow the Department to identify variances in project costs, schedule, and performance expectations; to take corrective action, if appropriate; and to make informed, project-specific selection decisions – a core element in stage two of GAO's maturity framework. Although the Department has made progress toward establishing such foundational processes, key practices still need to be implemented to ensure that the IRB has the information necessary to evaluate IT investment proposals and uses the information available to select between competing proposals.

According to the ITIM framework, IT investment management based on industry best practices establishes a systematic process for investment planning and management, including processes

for selecting, controlling, and evaluating investment options to maximize the value of the investments while minimizing their risks. This process requires the development of life-cycle cost, schedule, benefit, and risk estimates and the use of these estimates in comparing the relative merits of competing investment options. Such a process allows decision-makers to select those initiatives that best meet the agency's strategic goals as detailed in a target enterprise architecture and prioritize the selected initiatives for allocation of IT resources.

In accordance with IT investment management best practices outlined in GAO's ITIM framework, the Department has categorized investment proposals and established basic characteristics (selection criteria) for evaluating new IT proposals. In addition, the Department is using the established criteria in evaluating and selecting IT investments. However, the Department does not always 1) ensure that the IT proposals have the most up to date and complete life-cycle cost, benefit, schedule, and risk (CBSR) information available; and 2) use that information in evaluating competing investments and deciding on which investments to fund within and between the defined categories.

The Department did not always develop summary, high-level, life-cycle CBSR estimates for each IT investment proposal presented to the IRB for approval. CBSR information provides the basis for evaluating and selecting among competing investment options and provides a baseline for measuring progress/performance. Such information is essential to decision-makers, faced with time and resource constraints.

We reviewed all 47 business cases for IT investments presented to the Department's IRB for approval for fiscal years (FYs) 2003 and 2004. We found that 24 of the business cases did not clearly present the relevant information related to the total life-cycle cost of the proposed investment. While we generally found relevant cost information for the proposed investment within the business case documentation provided to the IRB, it required an in-depth review of the documentation and in some cases we could not trace all of the costs throughout the documentation. For example, we found that in all 24 of these business cases it was not clear what the total investment costs of the proposal was because the documentation provided included different amounts, but no reconciliation of the differences.

In addition, we could not assure that the IT proposals we reviewed included complete life-cycle cost information, i.e., all costs related to the initiative. Prior to the April 2002 investment review reorganization, FSA and the Department had separate investment review processes and were not assuring that all costs related to a project were included in the business case package. For

¹⁰ *Information Technology: DLA Needs to Strengthen Its Investment Management Capability (GAO-02-314)*, March 2002

example, we found that related project costs funded under separate contracts, such as the costs of life-cycle management planning, were not included as part of the total project costs. We also found that modifications increasing contract costs were funded out of operational budgets and not re-evaluated through the established investment review process. Although the Department's IT Investment Management Team Leader stated that, for at least two years, all program offices have been asked to provide complete CBSR information, including the information on related tasks or projects, complete life-cycle information is still a problem. In a briefing on the status of EA development, CIO officials acknowledged that IT investment proposals do not include complete life-cycle cost information, citing such examples as security and Government Paperwork Elimination Act (GPEA) associated costs.

In addition, we found no indication within the business case documentation packages reviewed that any CBSR data presented to the IRB was validated. The GAO ITIM framework suggests that someone validate the costs, benefits, schedule, and risks (CBSR) documented in the business case. Further, both the CIO Council guide: "Evaluating Information Technology Investments" and the OMB "Capital Programming Guide" include requirements for validating project risks, benefits, and costs. Although we found a Planning and Investment Review Working Group (PIRWG) "Validation", the validation appeared to be a validation to cost information presented in other schedules throughout the documentation rather than a validation of the CBSR data.

To validate our findings from our review of IT investments presented to the Department's IRB for approval for FY 2003 and 2004, we reviewed the business cases submitted in the March 2003 IRB meeting. We found similar issues relating to the lack of clear cost presentation and validation of the CBSR data. However, we also noted that the information provided to the IRB and the process is improving after each meeting.

The GAO ITIM framework states that categorization of projects is a best practice and leads to better focus on what an entity needs. Also, comparing proposed initiatives across these categories, as well as to those projects that have already been funded, is a critical process. The Department categorizes its IT initiatives into the following.

- Business Process Support Systems
- Program Delivery Systems
- IT Infrastructure
- IT Services
- General Office Automation

The Department does not have defined processes or guidance for comparing IT initiatives across the defined investment categories.

According to GAO's ITIM framework, the investment management process should ensure that the IRB collectively analyzes and compares all investments and proposals to select those that best fit with the strategic business direction, needs, and priorities of the organization. The Department has not instituted a process to ensure that IT investment proposals include complete, summary level, life-cycle cost information; nor that the IRB analyzes and compares all investments and proposals as a whole package/project within its defined categories of investments and between those categories. Therefore, the IRB may be making investment decisions without considering the entire cost of a project or without evaluating competing projects in other categories of investment. The IRB also may be making decisions inconsistent with the Department's IT goals.

Recommendations

Establishing foundational processes for project-level control and selection processes is necessary to develop a mature investment management capability. We recommend that the Department CIO ensure that

- 2.1 IT investment proposals include summary, high-level, life-cycle CBSR estimates.
- 2.2 IT investment proposals include total life-cycle cost estimates, including security, GPEA, and all other associated costs.
- 2.3 CBSR data provided in each IT investment proposal is validated.
- 2.4 Defined processes or guidance for comparing IT initiatives across the defined investment categories are developed and implemented.

Finding 3 – The Department Lacks an Investment Management Practice to Continually Assess Proposed and Ongoing Projects

According to GAO,¹¹ the second major step toward effective investment management is to continually assess proposed and ongoing projects as an integrated and competing set of investment options. This portfolio management approach would enable an organization to consider the relative costs, benefits, and risks of new and previously funded investments and thereby identify the mix that best meets its mission, strategies, and goals. The Department has not implemented processes associated with managing investments as a complete portfolio.¹² Specifically, the Department has not implemented an investment management practice to continually assess proposed and ongoing projects as an integrated and competing set of investment options – a core element in stage three of GAO’s maturity framework. As a result, the Department’s IRB may not be able to adequately assess the relative merits of investment proposals and make trade-offs among competing options.

According to the ITIM framework, the IRB should be responsible for monitoring each investment’s progress to ensure that each IT investment decision achieves its CBSR expectations. These investment (and portfolio) expectations are the baseline for periodic performance reviews that examine the costs incurred, the benefits attained, the current schedule, and the risks mitigated, eliminated, or accepted to date. We found, in a couple of the most recent submissions to the IRB (March 2003), that the Department had begun to track investments to the initial cost and schedule milestones. However, where differences were noted, we found little evidence of corrective action required or taken. In addition, although the Department requests updated CBSR information to review the status of prior IRB approved projects, it has not implemented a process or procedure to use the updated information to compare both proposed and ongoing IT investments in order to determine priorities and to make decisions about what projects to fund based on their relative costs, benefits, schedule, and risks.

Without processes in place to obtain and use updated CBSR information to compare both proposed and ongoing investments, the Department has limited investment control capabilities. As such, the Department is unable to assess and make trade-offs about the relative merits of spending funds to develop new systems, enhance current systems, or continue operating and

¹¹ *Information Technology: INS Needs to Strengthen Its Investment Management Capability* (GAO-01-146), December 2002.

¹² Meaning an integrated, enterprise-wide collection of investments.

maintaining existing systems, which could result in investment decisions inconsistent with the Department's goals.

Recommendations

Establishing processes for continually assessing proposed and ongoing projects is necessary to develop a mature investment management capability. We recommend that the Department CIO

- 3.1 Ensure that the status of prior IRB approved projects are tracked and compared to initial baseline performance measures, and corrective action taken, where appropriate; and
- 3.2 Develop a process or implement an investment management practice to continually assess proposed and ongoing projects as an integrated and competing set of investment options.

The Department's Comments

The Department generally concurred with our findings and recommendations and stated that improvements had already been made and incorporated in its most current IT Investment Management (ITIM) process. In addition, the Department's response indicated that it had already implemented many of the audit's recommendations, but acknowledged that there was still an opportunity for improvement by ensuring the practices are consistently applied. The Department's full response is attached to this report.

Audit of Capital Planning and Investment Management

Background

Each year the Department invests hundreds of millions of dollars on IT systems and activities. According to the Department's FY 2004 Exhibit 53 (budget documents), in FY 2002, it obligated about \$383.4 million on its total IT investment portfolio. In FY 2003, the Department expects to obligate about \$400 million on its total IT investment portfolio. In FY 2004, the Department plans to spend about \$417.3 million on its total IT investment portfolio.

In September 2002, we reported that the Department did not have an enterprise architecture (or agency-wide blueprint) to guide the development of its new and the evolution of its existing information systems.¹³ An enterprise architecture is a Clinger-Cohen Act requirement and a practice of successful public and private sector organizations. Our report recognized the Department's progress in developing an enterprise architecture, indicating that the Department had completed its current architecture and was beginning to develop its target architecture. Until the Department has such an architecture, it will not be able to ensure that the hundreds of millions of dollars it spends each year on new and existing information systems will optimally support mission needs. We recommended that the Department complete the development of its enterprise architecture, including the target architecture and a plan for moving from the current to the target architecture.

The Clinger-Cohen Act was enacted to address longstanding problems related to federal IT management. Among other things, it requires agency heads to implement a process for maximizing the value and assessing and managing the risks of its acquisitions. A key goal of the Clinger-Cohen Act is that agencies have processes and information in place to help ensure that IT projects are being implemented at acceptable costs, within reasonable and expected time frames, and are contributing to tangible, observable, improvements in mission performance.

In April 2002, the Department reorganized its investment review process and established a single Department-level Investment Review Board (IRB) consistent with GAO's guidance¹⁴. The Department has slowly implement its reorganized investment review process. As of the date of our review, the IRB had met 3 times – July 2002, December 2002, and March 2003.

¹³ *Audit of Enterprise Architecture*, Final Audit Report, dated September 30, 2002 (ED-OIG/A07-C0001).

¹⁴ Prior to April 2002, the Department and FSA had separate investment review processes.

Audit of Capital Planning and Investment Management

Objective, Scope, and Methodology

The objective of our review was to assess the status of the Department's compliance with the Clinger-Cohen Act requirements for capital planning and investment management. Specifically, we determined whether Department's investment review process ensured that 1) information technology (IT) investment decisions were consistent with the enterprise architecture, currently under development; 2) costs and benefits of each investment were fully considered in determining which projects to fund; and 3) costs and benefits of all IT investments were adequately tracked and considered in determining the mix of projects funded for the Department's overall investment portfolio.

To accomplish our objective, we reviewed applicable Department policies and procedures, as well as laws, regulations, and agency guidelines addressing capital planning and investment management. We obtained and reviewed the documentation of the Department's charter for its Investment Review Board (IRB). We obtained background budget information on the amount the Department obligates and expects to spend on IT investments for FYs 2002 through 2004. We interviewed personnel from the Department's and FSA's CIO offices.

We reviewed prior OIG audit reports, along with GAO reports, applicable to systems and capital planning and investment management issues. We evaluated the Department's efforts to date using GAO's "Information Technology Investment Management" (ITIM) framework. We limited this evaluation to the Department's progress in developing mature investment management processes – Stages 2 and 3 of GAO's ITIM maturity framework. We also limited the evaluation to the scope of our review, which did not include all critical processes and associated steps within Stages 2 and 3. We began with the 2001 IT Capital Planning & Investment Management Process Assessment Results performed by Booz-Allen and Hamilton, Inc., dated January 16, 2001, updating that assessment with any noted progress made based on our review of documentation, discussions with Department personnel, and review of business cases and PIRWG summaries (see Appendix I). We did not perform a complete Capability Maturity Model review of the Department's investment management processes.

We reviewed all 47 business cases presented to the Department's IRB for FYs 2003 and 2004. We limited our review to the most recent fiscal years because the Department reorganized its investment review process in April 2002 and we had information related to business cases

approved under the prior process from our previous work in a related area.¹⁵ We did not perform a reliability assessment because we did not use computerized data to meet our assignment objectives.

We conducted work at the Department's and FSA's CIO offices in Washington, D.C. and our OIG office in Kansas City, MO, during the period October 2002 to June 2003. We held an exit conference with Department and FSA officials on June 26, 2003. Our audit was performed in accordance with generally accepted government auditing standards appropriate to the scope of the review.

¹⁵ *Audit of FSA Modernization Partner Agreement*, Final Audit Report, dated November 20, 2002 (ED-OIG/A07-B0008).

Audit of Capital Planning and Investment Management

Statement on Management Controls

As part of our review, we gained an understanding of the Department's management control structure applicable to the scope of this review. For purposes of this review, we assessed and classified the significant management controls related to the Department's information technology efforts into the planning and assessment activities over the Department's capital planning and investment management. The assessment also included a determination of whether the processes used by the Department provided a reasonable level of assurance of compliance with the Clinger-Cohen Act.

Because of inherent limitations, and the limited nature of our review, a study and evaluation made for the limited purpose described above would not necessarily disclose material weaknesses in the management control structure. However, our assessment identified weaknesses in the Department's investment management processes as set out in the *Audit Results* section of this report.



UNITED STATES DEPARTMENT OF EDUCATION


OFFICE OF MANAGEMENT

ASSISTANT SECRETARY

AUG 21 2003

MEMORANDUM

TO: John Higgins
Inspector General

FROM: William Leiding 
Assistant Secretary for Management/Chief Information Officer

SUBJECT: Draft Audit Report
Audit of Capital Planning and Investment Management
(ED-OIG/A07-C0033)

OCIO concurs with the basic findings of the draft audit report. However, we made improvements to our IT Investment Management (ITIM) process that were incorporated into the recently completed Select Phase. The OIG review of basic materials, *i.e.*, 47 business cases from the FY 2002 Select Phase (covering BYs 2003 and 2004) does not reflect the ITIM process in use now. We recognize that OIG did not perform an in-depth review of the FY 2003 Select Phase, so that our ITIM process improvements are not reflected in the audit report. Our strategy in this response to the draft audit report and in the proposed Corrective Action Plan is that while we think we have already implemented many of the audit's recommendations, we see opportunity for improvement by ensuring the practices are consistently applied.

Our specific comments are organized around the three findings of the audit report.

Finding 1 – The Department has Limited Processes to Ensure Investments are Consistent with its Target Architecture.

We agree that, up to this year, we have been able to make only a limited use of the Enterprise Architecture in the ITIM process. We also agree that the lack of a target architecture has limited our ability to evaluate IT investments and ensure investments are consistent with the basic concept of a target architecture. The review in the current Select Phase, conducted by the Enterprise Architecture Working Group, was very useful to us in assuring that investments conformed with the various parts of the architecture in place, as well as architecturally related things, such as GPEA conformance.

Finding 2 – The Department has not implemented Necessary Processes to Ensure Project-level Control and Selection.

This is the area where most of the improvements in the ITIM process occurred. This year we instituted a disciplined Control Phase and an improved Select Phase. Both last year and this we have required that IT investments have up-to-date and complete life-cycle cost, benefit, schedule, and risk (CBSR) information. We recognize that last year the FSA's information was not current due to internal changes to the budget amounts after the preparation of their business cases, which were never updated. However, everything is current this year. We understand the finding is based on the information from the prior year's Select Phase but we believe that it does not summarily apply for the most recently completed Select Phase.

We disagree with the audit report conclusion that we have not instituted a process to ensure that IT investment proposals include complete, summary level, life-cycle cost information. We include life-cycle cost information that is decomposed into the development and maintenance components. We also provide summary level benefit information. While we don't provide it at the summary level, we do provide comprehensive schedule and risk information in our business cases.

We recognize that the business cases from FY 2002 did not indicate that the cost, benefits, schedule and risk information was validated. This year the Planning and Investment Review Working Group (PIRWG) has been very active in review of the business cases. Most of the PIRWG review teams, each of which was assigned five or six business cases, performed a reasonable validation function.

Finally, while we group our IT investments into five categories (business process support systems; program delivery systems; IT infrastructure; IT services; and general office automation), we compare all the IT initiatives across the categories. We use the categories as a logical way to classify initiatives so that we can review like initiatives together, improving our ability to identify redundancies.

Finding 3 – The Department Lacks an Investment Management Practice to Continually Assess Proposed and Ongoing Projects.

We believe that we now use an investment management practice that is continually assessing proposed and ongoing projects. The Department has recently implemented quarterly Control Phase reviews, and all significant IT initiatives, regardless of life-cycle phase, are assessed. Where appropriate, we recommend that the IRB require corrective actions to remediate any problems.

Finding 1 – The Department has Limited Processes to Ensure Investments are Consistent with its Target Architecture.

Recommendations:

- 1.1 That the Department CIO: Formalize the Department's review process for IT investment compliance with its EA through written procedures delineating review responsibilities between groups.
- 1.2. That the EAWG: Provide a high-level summary of whether the new initiative is supported by the current architecture or whether the architecture or the initiative needs to be changed in order to assist the IRB in its evaluation of competing investment initiatives; and
- 1.3 As the information becomes available on the Department's target architecture, incorporate it into the review of EA compliance.

Proposed Action Items:

- 1.1.1 Develop and use in the FY 2004 Select Phase, a set of written procedures that formalizes the Department's review process for IT investment compliance with the Enterprise Architecture. The written procedures will delineate review responsibilities. Planned completion date: 3/31/2004
- 1.2.1 For the FY 2004 Select Phase the Enterprise Architecture Working Group will provide, for each new initiative, a high-level summary of how the initiative is supported by the current architecture and whether the architecture or the initiative needs to be changed in order to assist the IRB in its evaluation of competing investment initiatives. Planned completion date: 8/31/2004
- 1.3.1 As information becomes available on the Department's target architecture, the Enterprise Architecture Working Group will use it in the review of significant investments. Planned completion date: 8/31/2004

Finding 2 – The Department has not implemented Necessary Processes to Ensure Project-level Control and Selection.

Recommendations. That the CIO ensure that:

- 2.1 IT investment proposals include summary, high-level, life-cycle cost, benefit, schedule and risk (CBSR) estimates.

- 2.2 IT investment proposals include total life-cycle estimates, including security, GPEA, and all other associated costs.
- 2.3 CBSR data provided in each IT investment proposal is validated.
- 2.4 Defined processes or guidance for comparing IT initiatives across the defined investment categories are developed and implemented.

Proposed Action Items:

- 2.1.1 In the FY 2004 Select Phase, each significant IT investment proposal will include summary, high-level, life-cycle cost, benefit, and risk estimates. Planned completion date: 8/31/2004
- 2.2.1 In the FY 2004 Select Phase, each significant IT investment proposal will include improved life-cycle estimates, including security and other appropriate costs. Planned completion date: 8/31/2004
- 2.3.1 In the FY 2004 Select Phase, the ITIM process will include a reasonableness review of the CBSR data for each significant IT investment proposal. Planned completion date: 8/31/2004
- 2.4.1 For the FY 2004 Select Phase, defined procedures for comparing IT initiatives across the defined investment categories will be developed and implemented. The defined investment categories are: Business Process Support Systems; Program Delivery Systems; IT Infrastructure; IT Services; General Office Automation. Planned completion date: 3/31/2004

Finding 3 – The Department Lacks an Investment Management Practice to Continually Assess Proposed and Ongoing Projects

Recommendations. That the Department CIO:

- 3.1 Ensure that the status of prior IRB approved projects are tracked and compared to initial baseline performance measures, and corrective action taken, where appropriate; and
- 3.2 Develop a process or implement an investment management practice to continually assess proposed and ongoing projects as an integrated and competing set of investments.

Proposed Action Items:

- 3.1.1 Beginning with the FY 2004 Select Phase, all of the IRB approved projects will be tracked and compared to initial or updated baseline performance measures. Corrective actions will be directed by the IRB as appropriate. Planned completion date: 8/31/2004

- 3.1.2 Improve the investment management practice of continually assessing proposed and ongoing initiatives as an integrated and competing set of investment options in coordination with Action Item 3.1.1. Planned completion date: 8/31/2004